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Techno-Economic Simulation of a Grid-Connected PV System Design as Specifically Applied to Residential in Surabaya, Indonesia

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Abstract

This paper simulates the feasibility of installing a grid-connected photovoltaic (PV) system in a typical residential in Surabaya, Indonesia. The study was conducted to evaluate the technical, economic and environmental aspects of PV system for supplying of household electricity energy needs. A 1 kWp grid-connected PV system simulation is carried out with PVsyt and RETScreen software. The simulation expected to help in demonstrating the advantages and challenges of installing of a grid-connected PV system for residential in Surabaya.

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Keywords: Grid-connected; photovoltaic; PVsyst; residential; RETScreen; simulation

Nomenclature

CO_2	carbon dioxide	**MPP**	maximum power point
GHG	greenhouse gas	**NO_x**	nitrogen oxides
IAM	air mass of one	**RETScreen**	renewable energy system simulation software
IRR	internal rate of return	**PVsyst**	photovoltaic system simulation sofware

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